

### Amendments to the claims:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently amended) A method of constructing an improved, electrically excited, gas discharge lamp, ~~whose output is characteristic of spontaneous emission of at least one IR-active gas species to a ground state,~~ comprising the steps of:

constructing a lamp envelope;

cleaning said lamp envelope; and

filling said envelope with a gas mixture comprising ~~said~~ at least one IR-active gas species, said gas species being such that said lamp provides an output characteristic of spontaneous emission to a ground state when electrically excited;

the improvement being the additional step of including a catalytic material deposited in finely divided form within said lamp envelope.

2. (Original) The method according to claim 1, wherein said catalytic material is operative to increase the spectral stability of said lamp by reducing changes with time in the level of self-absorption in said gas mixture.

3. (Original) The method according to claim 1 wherein said catalytic material is coated on an inside wall of said envelope.

4. (Currently amended) The method according to claim 1, wherein said catalytic material is chosen from a group ~~comprising~~ consisting of gold, silver, rhodium, iridium, palladium, platinum and nickel.

5. (Currently amended) A method of constructing an improved electrically excited gas discharge lamp, ~~whose output is characteristic of spontaneous emission of at least one IR-active gas species to a ground state,~~ comprising the steps of:

constructing a lamp envelope;  
cleaning said lamp envelope; and

filling said envelope with a gas mixture comprising ~~said~~ at least one IR-active gas species, said gas species being such that said lamp provides an output characteristic of spontaneous emission to a ground state when electrically excited;

the improvement being the additional step of including a catalytic material deposited in finely divided form within said lamp envelope, such that the volume of said lamp can be decreased.

6. (Currently amended) The method according to claim 5, wherein said lamp volume is ~~less than~~ approximately 6 milliliters.

7. (Currently amended) A method of constructing an improved electrically excited gas discharge lamp, ~~whose output is characteristic of spontaneous emission of at least one IR-active gas species to a ground state,~~ comprising the steps of:

constructing a lamp envelope;  
cleaning said lamp envelope; and

filling said envelope with a gas mixture comprising ~~said~~ at least one IR-active gas species, said gas species being such that said lamp provides an output characteristic of spontaneous emission to a ground state when electrically excited;

the improvement being the additional step of including a catalytic material deposited in finely divided form within said lamp envelope, such that the IR-active gas concentration can be decreased.

8. (Original) The method according to claim 1 wherein said IR-active gas species is carbon dioxide.

9. (Currently amended) The method according to claim 8~~1~~, wherein said IR-active gas species is carbon dioxide and the concentration of said carbon dioxide is less than approximately 5%.

10. (Currently amended) An ~~improved~~ electrically excited gas discharge lamp, ~~whose output is characteristic of spontaneous emission of at least one IR-active gas species to a ground state,~~ comprising:

a lamp envelope containing a gas mixture comprising ~~said~~ at least one IR-active gas species; and

electrodes external to said envelope for exciting said at least one IR-active gas species, said gas species being such that said lamp provides an output characteristic of spontaneous emission to a ground state; and

~~the improvement being a catalytic material~~ deposited in finely divided form located within said lamp envelope.

11. (Original) The lamp according to claim 10, wherein said catalyst is operative to increase the spectral stability of said lamp by reducing changes with time in the level of self-absorption in said gas mixture.

12. (Original) The lamp according to claim 10, wherein said catalytic material is coated on an inside wall of said envelope.

13. (Currently amended) The lamp according to claim 10, wherein said catalytic material is chosen from a group ~~comprising~~ consisting of gold, silver, rhodium, iridium, palladium, platinum and nickel.

14. (Original) The lamp according to claim 10, wherein said IR-active gas species is carbon dioxide.

15. (New) The method according to claim 5 wherein said IR-active gas species is carbon dioxide.

16. (New) The method according to claim 7 wherein said IR-active gas species is

carbon dioxide.

17. (New) The method according to claim 9, wherein said decreased concentration of said carbon dioxide is such that the self-absorption of said lamp is reduced, resulting in increased absorption curve depths in a gas analyzer utilizing the emission spectrum of said carbon dioxide.